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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,708

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Alfred Ecker

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7590

06/12/2006

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EXAMINER

LEE, PATRICK J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/646,708

Applicant(s)

ECKER ET AL.

Examiner

Patrick J. Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5-12,15,17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-12,15,17,19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is in response to amendment filed May 22, 2006.

### ***Claim Objections***

2. Claims 1, 9, & 12 are objected to because of the following informalities:

With respect to claims 1 & 12, in accordance with 37 C.F.R. § 1.75(i), elements of claims should be delineated with indentations.

With respect to claim 9, a period should be deleted in line 5 and in line 7 after the word "degree". Also, the word "degree" in claim 9 should read "degrees".

Appropriate correction is required.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the bonding agent or adhesive that causes the fiber to be bonded into recesses as stated in claims 1 and 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 5-12, 15, 17, & 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to claims 1 and 12, the applicant claims the use of recesses into which fibers are bonded. However, applicant discloses the use of recesses separate from the use of bonding agents. Applicant discloses the use of adhesives to bond the fibers directly on the surface of the work piece on lines 25-31 of page 4 of the specification. Applicant then separately discloses the integration of fibers into recesses

on lines 1-11 of page 5 of the originally filed specification. It is not disclosed that integration of the fibers into the recesses would consist of bonding the fibers into the recesses. As a result, claims 1 & 12 and dependent claims 5-11, 15, 17, & 19-20 are rejected.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 & 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,600,149 B2 to Schulz et al.

With respect to claim 1, Schulz et al disclose a fiber grating environmental sensing system comprising: optical fibers (207, 253, 303, 357, 405, 459, 507, 657, 703, 755, 2003, 2005, 2007, 2063, 2101, 2103, 2105) with gratings (161, 3173, 3181, 3281, 3283) as a Bragg grating sensor. Optical fibers are embedded into notches of V-groove plate (355, 403, 453, 503, 659) as recesses with a breadth and depth matched to optical fibers. Optical fibers are bonded into the grooves through the use of top plates (361, 409, 457, 511).

With respect to claims 10-11, Schulz et al disclose the use of this sensing device on a airplane wing, which would constitute a dynamically loaded component.

With respect to claim 12, Schulz et al disclose a fiber grating environmental sensing system comprising: optical fibers (207, 253, 303, 357, 405, 459, 507, 657, 703,

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755, 2003, 2005, 2007, 2063, 2101, 2103, 2105) with gratings (161, 3173, 3181, 3281, 3283) as a Bragg grating sensor. Optical fibers are embedded into notches of V-groove plate (355, 403, 453, 503, 659) as recesses with a breadth and depth matched to optical fibers. Optical fibers are bonded into the grooves through the use of top plates (361, 409, 457, 511).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 5-8, 15, 17, & 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,600,149 B2 to Schulz et al.

Schulz et al disclose the device as described in the discussion of claims 1 & 10-

12.

With respect to claim 5, Schulz et al do not explicitly disclose the geometrical configuration to be different from other fibers. Schulz et al disclose in figure 17 a linear arrangement to fit the different pieces of an airplane wing. However, to modify the teachings of Schulz et al accordingly would have been obvious to one of ordinary skill in the art because such would allow for the application of the sensing device to objects that are not completely flat and to allow for expansion of the area over which the device is able to sense the environment.

With respect to claim 6, the modified Schulz et al do not explicitly disclose the arrangement using different curvatures, but such would have been obvious to one of ordinary skill in the art because such would allow for the sensing device to better fit the workpiece.

With respect to claim 7, the modified Schulz et al disclose the use of a Bragg grating sensor without curvature (see figure 17).

With respect to claim 8, the modified Schulz et al illustrate in figure 17, the use of sensors in such a way that a first section is angled off from a second section of fiber.

With respect to claim 15, Schulz et al do not explicitly disclose the geometrical configuration to be different from other fibers. Schulz et al disclose in figure 17 a linear arrangement to fit the different pieces of an airplane wing. However, to modify the teachings of Schulz et al accordingly would have been obvious to one of ordinary skill in the art because such would allow for the application of the sensing device to objects that are not completely flat and to allow for expansion of the area over which the device is able to sense the environment.

With respect to claims 17 & 20, the modified Schulz et al does not explicitly disclose the design of the workpiece as a blade of a turbine or a housing of a turbine, but such would have been obvious to one of ordinary skill in the art as an intended use of the device as such would be subject to similar conditions as the wing as illustrated in figure 17.

With respect to claim 19, the modified Schulz et al do not explicitly disclose the arrangement using different curvatures, but such would have been obvious to one of ordinary skill in the art because such would allow for the sensing device to better fit the workpiece.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,600,149 B2 to Schulz et al in view of US 6,774,354 B2 to Ames.

With respect to claim 9, Schulz et al do not disclose the arrangement of the fiber on the workpiece such that one fiber has a curved section of approximately 90 degrees and another section of approximately 180 degrees. However, Ames discloses such in figure 4 by using fiber (12') over a wide area over workpiece (14). To modify the teachings of Ames accordingly would allow monitoring over a wide area with fewer detector-emitter arrangements.

### ***Response to Arguments***

12. Applicant's arguments with respect to claims 1, 5-12, 15, 17, & 19-20 have been considered but are moot in view of the new ground(s) of rejection.



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***Conclusion***


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patrick J. Lee  
Examiner  
Art Unit 2878

PJL  
May 31, 2006

  
Stephane B. Allen  
Primary Examiner